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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,638	04/21/2006	Philippus De Bree	TS6457US	5704
23632	7590	03/20/2008		
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EXAMINER				
SUN, XIUQIN				
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2863				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/576,638

**Applicant(s)**

DE BREE ET AL.

**Examiner**

XIUQUIN SUN

**Art Unit**

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CIS-100)
- Paper No(s)/Mail Date 04/21/2006

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-7, 9, 10 and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Shilling (U. S. Pat. No. 5615115).

Regarding claim 1, Shilling discloses a method of assessing pore fluid pressure behaviour in a region of interest in a subsurface formation below an earth surface (Abstract; Fig. 3), the method comprising: determining a stress value representative of formation stress in a measurement region of the subsurface formation being located displaced from the region of interest (Fig. 3; col. 3, lines 9-13; cols. 5-6, lines 62-7); and detecting presence of non-hydrostatic pore fluid pressure in the region of interest using the stress value (col. 3, lines 25-29; col. 4, lines 6-11; col. 10, lines 55-58).

Regarding claim 2, Shilling discloses: detecting a pressure boundary wherein the pore fluid pressure changes from hydrostatic to non-hydrostatic (col. 1, lines 47-54; col. 4, lines 36-56; col. 10, lines 8-12).

Regarding claim 3, Shilling discloses: detecting a precursor zone wherein the pore fluid pressure is hydrostatically determined and a stress gradient increases (col. 1, lines 47-54; col. 4, lines 36-56 and lines 57-67).

Regarding claim 4, Shilling discloses: the fluid pressure in the measurement region is hydrostatic (col. 4, lines 36-56 and lines 57-67).

Regarding claim 5, Shilling discloses: the measurement region of the subsurface formation is located less deep as seen from the earth surface than the region of interest (col. 4, lines 26-30 and lines 35-56; col. 5, lines 17-21).

Regarding claim 6, Shilling discloses: inferring an effective stress value representative of the difference between the formation stress in the measurement region and a value of pore fluid pressure in the measurement region (col. 10-11, lines 55-30).

Regarding claim 7, Shilling discloses: detecting non-hydrostatic pore fluid pressure in the region of interest comprises using a geo-mechanical model of the subsurface formation (col. 10-11, lines 55-17).

Regarding claim 9, Shilling discloses: determining the stress value comprises performing a geophysical measurement, such as a seismic measurement or a sonic measurement, to obtain geophysical data, and processing the geophysical data to obtain the stress value (col. 5, lines 39-67).

Regarding claim 10, Shilling discloses: determining two or more stress values each at a different depth in the measurement region (cols. 5-6, lines 62-7).

Regarding claim 13, Shilling discloses: wherein prior to assessing pore fluid pressure behavior in the region of interest: providing a drill bit on a lower end of a drill string; and the lower end of the drill string is lowered in a bore hole in the subsurface

formation; and wherein during assessing the pore fluid pressure behavior in the region of interest: the drill bit is operated to deepen the hole (col. 10, lines 6-16).

Regarding claim 14, Shilling discloses a system for assessing pore fluid pressure behavior in a region of interest in a subsurface formation below an earth surface (Abstract; Figs. 1-3), the system comprising: a measurement arrangement for producing a signal representing a stress value representative of the formation stress in a measurement region of the subsurface formation (col. 3, lines 9-13; cols. 5-6, lines 62-7); and a signal processing device arranged to receive the signal and utilize the signal to detect presence of non-hydrostatic pore fluid pressure in the region of interest, which region of interest is located displaced from the measurement region (col. 3, lines 25-29; col. 4, lines 6-11; col. 10, lines 55-58).

Regarding claim 15, Shilling discloses: the measurement system includes at least a measurement-while-drilling device that is installable on a drill pipe for lowering into a bore hole such that the measurement-while-drilling device can reach or approach the measurement region (col. 10, lines 6-16).

Regarding claim 16, Shilling discloses: the measurement region of the subsurface formation is located above the region of interest (Fig. 1; col. 4, lines 35-56).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter

as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 8, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shilling in view of Van Den Beukel (U.S. Pub. No. 20050149267).

Regarding claim 8, Shilling discloses the method including the subject matter discussed above except: determining a principal stress value representative of the horizontal formation stress in the measurement region.

Van Den Beukel teaches determining a stress value representative of formation stress in a measurement region of the subsurface formation (sections 0011, 0014); and determining a principal stress value representative of the horizontal formation stress in a measurement region in a subsurface formation below an earth surface (section 0071).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Van Den Beukel in the invention of Shilling in order to include more comprehensive spatial distribution characteristics of the stress value in detecting the presence of pore fluid pressure in the region of interest (Van Den Beukel, section 0073).

Regarding claims 11 and 12, Shilling discloses the method including the subject matter discussed above except: inferring effective stress values for each of the stress values, which effective stress values are representative of the difference between the formation stress at the corresponding depths in the measurement region and the value of the pore fluid pressure at substantially the same depth in the measurement region;

and inferring a variation of the two or more effective stress values as a function of their depths and comparing to a nominal value.

Van Den Beukel teaches determining a stress value representative of formation stress in a measurement region of the subsurface formation (sections 0011, 0014); and inferring effective stress values for each of the stress values, which effective stress values are representative of the difference between the formation stress at the corresponding depths in the measurement region and the value of pore fluid pressure at substantially the same depth in the measurement region (sections 0032-0034 and 0054); and inferring a variation of the two or more effective stress values as a function of their depths and comparing to a nominal value (sections 0057 and 0058).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Van Den Beukel in the invention of Shilling in order to include more comprehensive spatial distribution characteristics of the stress value in detecting the presence of pore fluid pressure in the region of interest (Van Den Beukel, section 0073).

#### ***Contact Information***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (571)272-2280. The examiner can normally be reached on 6:30am-4:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571)272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/X. S./  
Examiner, Art Unit 2863

/John E Barlow Jr./  
Supervisory Patent Examiner, Art Unit  
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